

512A ABSTRACTS - Valvular Heart Disease

JACC March 19, 2003

1157-23 Time Course Changes in Left Atrial Appendage Function, Left Atrial Size, and Spontaneous Echo Contrast After Balloon Mitral Valvuloplasty

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Background: Balloon mitral valvuloplasty (BMV) improves the depressed left atrial appendage (LAA) function. However no study has assessed the long-term changes in LAA function and left atrial (LA) size after BMV.

Methods: LAA function (ejection fraction, filling & emptying velocities & their velocity time integrals) and LA size were prospectively studied in 100 consecutive severe mitral stenosis patients (age 29.2±8.4 years, 52 males) by transesophageal echocardiography (TEE) 24 hours before and after BMV, at 3 & 6 months, then at 6-months intervals and compared with 20 controls.

Results: LAA function and LA size during follow up is shown in table.

Parameters before and after BMV

	Pre BMV	Post BMV	3 month	12 month	24 month	36 - 48 months	Control
Mitral Valve Area (cm ²)	0.78±0.15	2.02±0.28*	2.06±0.31	2.07±0.4	2.04±0.34	2.04±0.38	-
LA Area (cm ²)	28.4±7.1	24.6±6.6*	22.5±6.1	20.6±6.1	19.2±6.6	18.4±5.0	13.0±2.1
LAA Ejection Fraction (%)	39.3±11.6	53.3±2.1*	57.5±12.9	56.3±3.2	57.4±0.5	53.0±11.6	61.1±10.2
LAA Emptying Velocity (cm/sec)	20.0±8.4	32.7±0.8*	33.0±12.0	31.6±9.3	35.9±0.2	35.0±11.7	46.6±18.3
LAA Filling Velocity (cm/sec)	24.0±11.1	35.9±1.8*	36.7±14.9	35.2±2.4	40.6±3.8	38.3±10.9	46.2±21.6

*p<0.001

There was significant improvement in LAA function and it was maintained during follow up (FU) but did not reach control values. The improvement in LAA function was more marked in patients who had post BMV area >1.5 cm², sinus rhythm (NSR), and smaller LAA. LA area continued to decrease during FU and the decrease in LA area was more marked in patients who were in NSR. Spontaneous echo contrast disappeared in 50% and 80% of cases immediately after BMV and at last FU respectively. After BMV 33% of patients in atrial fibrillation reverted to NSR within 24 months. There was no LA/LAA clot detected during follow up.

Conclusions: BMV favorably alters LAA function & LA size, which is maintained during FU. Organic involvement of the LAA precludes normalization of LAA function following BMV. Improved LAA function & LA size has favorable effect on LA/LAA clot formation and rhythm.

1157-24 Preliminary Report on Percutaneous Mechanical Mitral Commissurotomy

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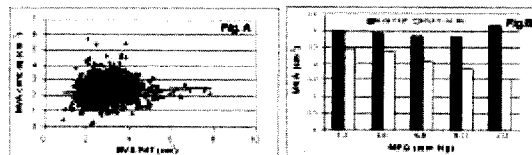
Background: Our first clinical experience on percutaneous mechanical mitral commissurotomy (PMMC) consisted of 46 patients with mitral stenosis in which 13 patients with mitral stenosis after prior surgical commissurotomy (38.26%). The mean age was 45.52 ± 10.5 years (17 to 70). The gender: 38 females and 8 males. 22 were in sinus rhythm and 24 presented with atrial fibrillation. The mean total echo score was 9.81 ± 2.3 and the majority in functional class (NYHA) III/IV (54.35%). **Results:** The procedures was technically successful in 46 patients (100%). PMMC resulted in significant improvement in hemodynamic values: the mean left atrial pressure fell from 31.10 ± 7.22 mmHg to 17.5 ± 5.15 mmHg (p < 0.0001), the mean transmitral gradient (MVG) dropped from 17.24 ± 5.36 mmHg to 6.88 ± 2.74 mmHg (p<0.0001), and the mean Pulmonary pressure fell from 52.93 ± 19.14 mmHg to 37.9 ± 12.23 mmHg (p<0.0001). The mitral valve area (MVA) on 2D echo cardiography increased significantly from 0.89 ± 0.21 cm² to 2.02 ± 0.46 cm² (p<0.0001), and on echo Doppler increased from 0.90 ± 0.24 cm² to 2.0 ± 0.44 cm² (p<0.0001). Complications included 1 case with increasing of MR post PMMC (grade III), she then tolerated well with the medical therapy. **Conclusion:** The first results of this series attest to the effectiveness and usefulness of the PMMC with Cribier device in Vietnam. Further clinical evaluation is on-going.

1157-25 Mitral Valve Pressure Half-Time Does Not Predict the Effective Valve Area in Prosthetic Mitral Valves of All Types: A Review of 2,175 Prosthetic Mitral Valves

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Background: Transmitral mitral continuous-wave pressure half-time (PHT) has been historically used to assess mitral valve area (MVA) in native mitral valve stenosis via the formula $MVA (cm^2) = 220/PHT (msec)$. Despite broad clinical usage, this formula has never been validated for prosthetic valves where the effective mitral valve area may not be in the stenotic range. **Methods:** This retrospective study evaluated 2175 various prosthetic mitral valves over a 6 year period undergoing routine echocardiographic surveillance. This included ATS 547, Bjork-Shiley 51, Carpentier-Edwards 126, Hancock 91, Lillie-Kaster 36, Mosaic 31, Perimount 62, St Jude 1139, Starr-Edwards 47 and Xenotech 45. Exclusion criteria included incomplete data (n=699) and significant (greater

than grade 1/4) mitral and/or aortic regurgitation (n=217). The remaining 1237 examinations were analysed. **Results:** There was no relationship between the MVA as assessed by PHT and the MVA derived from the continuity equation ($r^2 = 0.10043$, p=ns) - see fig. A. However, the continuity-derived MVA linearly decreased ($r^2 = 0.98$) with increasing mean pressure gradient (MPG). There was absolutely no relationship between MPG and PHT-derived MVA - see fig. B. **Conclusion:** Transmitral PHT is of no use in the assessment of prosthetic mitral valves. However, MVA calculated via the continuity equation is linearly related to transmitral gradient and may be of use for sequential prosthesis follow-up.

**1157-26 Serial Echocardiographic Follow-Up of Percutaneously Implanted Pulmonary Valve in a Swine Model**

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Background: The purpose of this study was to determine the short and intermediate term function of percutaneously implanted self expanding stented valve in the pulmonary artery (PV) in a swine model by serial transthoracic echocardiography (TTE).

Methods: Ten female farm pigs (6 - 20 Kg) underwent percutaneous stenting of their native pulmonary valve to create pulmonary insufficiency. All animals underwent percutaneous implant of a self-expanding stented valve two to four weeks later. All procedures were performed under fluoroscopic and transthoracic, real time echo guidance. Echocardiograms were performed pre and post valve implant and at 2 wks, 4 wks, 8 wks and 12 wks post valve implant. All studies were found to be diagnostic quality by 2 pediatric cardiologists.

Results: The RV systolic and diastolic diameter (RVESD, RVEDD) and PA diameter (PAD) indexed to body weight (i) did not increase throughout the study period. There was a trend toward decreasing RV diameter/weight over time. Right ventricular hypertension (TR velocity measured at tips of tricuspid valve leaflets) developed in 3/10 pigs following valve implant and was mild at 8-12 wks post implant. There was perivalvar leak (mild) in 3/10 pigs. There was no implanted valve regurgitation in any of the animals.

Conclusion: There was good valve function demonstrated on serial echocardiographic follow up of the implanted pulmonary valve without stenosis or insufficiency up to 3 months of follow up. There was no evidence of thrombosis or endocarditis.

Results

	Baseline	12 Weeks
RVEDDi (mm/kg)	0.9 (range 0.6 - 1.0)	0.5 (range 0.4 - 0.7)
RVESDi (mm/kg)	0.6 (range 0.5 - 0.8)	0.4 (range 0.3 - 0.5)
PADi (mm/kg)	0.9 (range 0.7 - 1.1)	0.6 (range 0.4 - 0.8)
TR (m/s)	2.0 (range 0.9 - 2.6)	2.2 (range 1.4 - 3.0)
PV (m/s)	1.1 (range 0.6 - 1.9)	1.3 (range 0.7 - 1.8)

POSTER SESSION

1182 Experimental Advances in Cardiac Surgery

Tuesday, April 01, 2003, Noon-2:00 p.m.

McCormick Place, Hall A

Presentation Hour: Noon-1:00 p.m.

1182-21 Preoperative Predictive Risk Model for Mortality in Patients With Acute Type A Aortic Dissection Undergoing Surgery: Lessons From the International Registry of Acute Aortic Dissection (IRAD)

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Background: Surgical treatment of acute type A dissection (AAD) is still associated with a considerable mortality. A preoperative risk-predictive model may be helpful for optimal management of AAD patients. **Methods:** We evaluated 526 of 1032 patients (mean age 60±14 yrs, males 70%) enrolled in IRAD (1996-2001), who were operated on for AAD. Univariate associations with surgical mortality outcomes produced Chi-square values